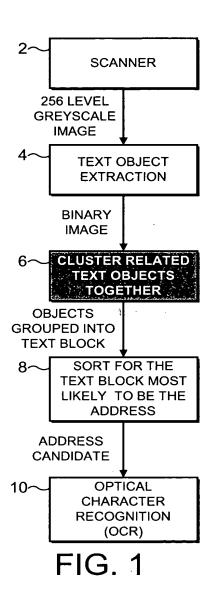
Title: IMAGE PROCESSING FOR CLUSTERING RELATED TEXT OBJECTS Inventor(s): Robert Edward Meredith SWANN, et al.

Serial No.: 09/724 182 Docket No.: R&G C-314

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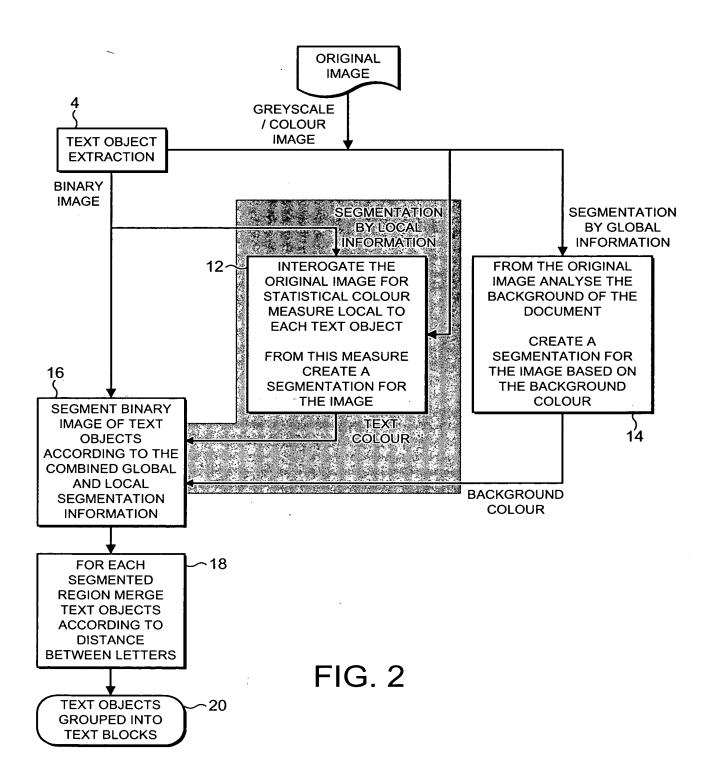


Pitle: IMAGE PROCESSING FOR CLUSTERING RELATED TEXT OBJECTS Inventor(s): Robert Edward Meredith SWANN, et al.

Serial No.: 09/724 182 Docket No.: R&G C-314

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Serial No.: 09/724 182 Docket No.: R&G C-314

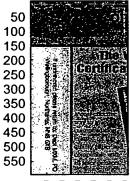
Replacement Sheet

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A) ORIGINAL DOCUMENT IMAGE

FEB 0 7 2005



50 150 250 250 300

FIG. 3A

D) EXTRACT BACKGROUND FROM ORIGINAL

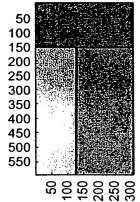


FIG. 3D

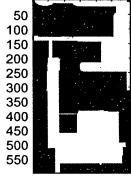
B) EXTRACTED BINARY TEXT OBJECTS



50 150 200 250 300

FIG. 3B

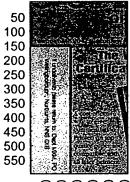
C) CLUSTERING USING SIMPLE MERGING. ALL TEXT OBJECTS ARE CLUSTERED TOGETHER



50 150 250 250 300

FIG. 3C

E) SEGMENT ACCORDING TO BACKGROUND. FOR EACH BACKGROUND REGION SEPARATELY APPLY MERGING TO THE TEXT OBJECTS



50 150 200 300 300



FIG. 3E

F) THE RESULTS ARE CLUSTERED TEXT OBJECTS THAT HAVE CONSISTENT BACKGROUND

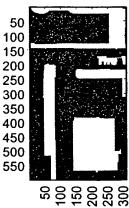


FIG. 3F

Title: IMAGE PROCESSING FOR CLUSTERING RELATED TEXT OBJECTS Inventor(s): Robert Edward Meredith SWANN, et al.

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ORIGINAL DOCUMENT IMAGE

Flat 1156 550 LETTUCE 600 TROUBLE 650 My wife and I like Thumb' lettuces, by 700 trouble growing the 750 them off in pots in I greenhouse; but Wh 800 them out after the f gone, they collapse 850 over. How can I pres

from happening agal S A Barton, Essex

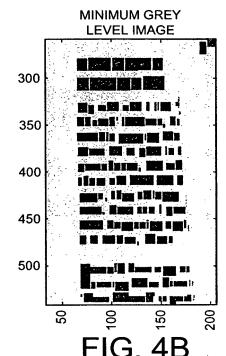
would have a go a

FIG. 4A

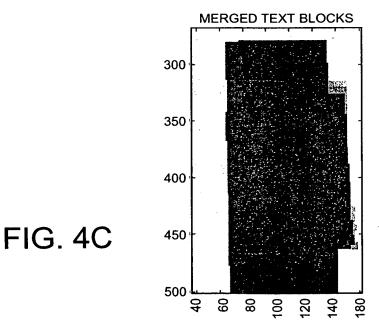
900

950

1000 1050 FOR EACH OF THE BINARY TEXT OBJECTS
EXTRACTED THE LOCAL MINIMUM GREYLEVEL
IS OBTAINED FROM THE ORIGINAL IMAGE.
THE LOCAL MINIMUM GREYLEVEL IS A
MEASURE OF THE TEXT COLOUR



THE MINIMUM GREYLEVEL DATA IS USED TO BUILD A SEGMENTATION OF THE IMAGE. EACH REGION IN SEGMENTATION IS AN AREA OF THE IMAGE WHERE THE TEXT COLOUR IS CONSISTENT.



Title: IMAGE PROCESSING FOR CLUSTERING RELATED TEXT OBJECTS Robert Edward Meredith SWANN, et al. Inventor(s): Serial No.: 09/724 182 Docket No.: R&G C-314 Replacement Sheet 5/5 **ORIGINAL IMAGE** 256 LEVEL **GREYSCALE IMAGE** TEXT OBJECT **EXTRACTION BINARY IMAGE** SEGMENTATION **SEGMENTATION** BY LOCAL BY GLOBAL INFORMATION **INFORMATION** 12-INTEROGATE THE FROM THE ORIGINAL ORIGINAL IMAGE FOR **IMAGE ANALYSE THE** STATISTICAL COLOUR **BACKGROUND OF THE MEASURE LOCAL TO DOCUMENT EACH TEXT OBJECT CREATE A** FROM THIS MEASURE SEGMENTATION FOR **CREATE A** THE IMAGE BASED ON 16 SEGMENTATION FOR THE BACKGROUND THE IMAGE **COLOUR** SEGMENT BINARY **IMAGE OF TEXT** 14 **OBJECTS** GREYLEVEL ACCORDING TO THE COMBINED GLOBAL AND LOCAL **BACKGROUND SEGMENTATION GREYLEVEL INFORMATION** FOR EACH -18 **SEGMENTED** REGION MERGE **TEXT OBJECTS ACCORDING TO DISTANCE BETWEEN LETTERS OBJECTS GROUPED INTO TEXT BLOCKS** SORT FOR THE **TEXT BLOCK MOST** LIKELY TO BE THE **ADDRESS** FIG. 5 **ADDRESS** CANDIDATE **OPTICAL** -10 CHARACTER BEST AVAILABLE COPY RECOGNITION (OCR)